

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

**NITRIDE SEMICONDUCTORS CO.,  
LTD.,**

*Plaintiff*

-v-

**LITE-ON TECHNOLOGY  
CORPORATION, LITE-ON  
TECHNOLOGY USA, INC., LITE-ON,  
INC., LITE-ON TRADING USA, INC.,  
*Defendants***

**W-21-CV-00183-ADA**

## CLAIM CONSTRUCTION ORDER AND MEMORANDUM IN SUPPORT THEREOF

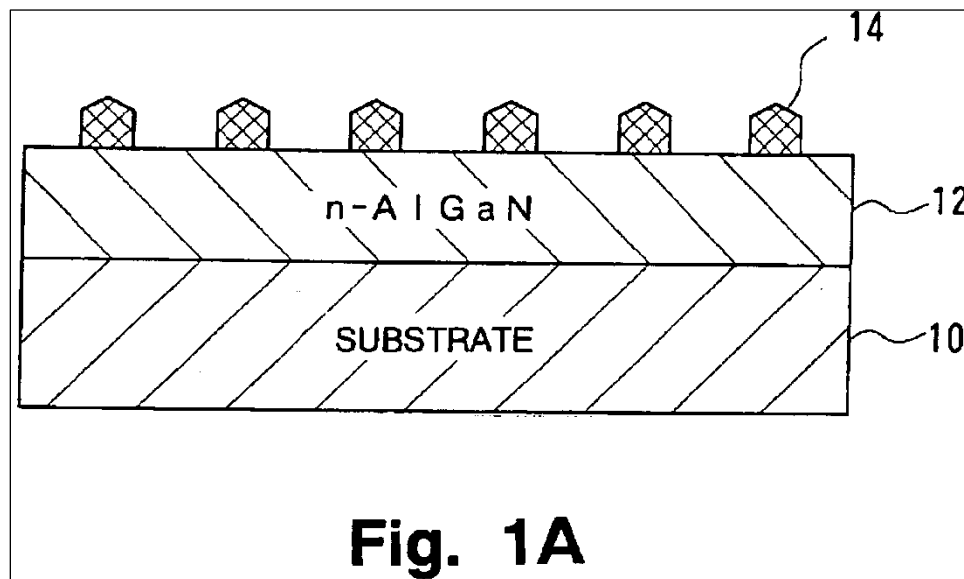
Before the Court are the Parties' claim construction briefs: Defendants Lite-on Technology Corporation, Lite-On Technology USA, Inc., Lite-On, Inc., Lite-On Trading USA, Inc.'s Opening and Reply briefs (ECF Nos. 34 and 36, respectively) and Plaintiff Nitride Semiconductors Co., Ltd.'s Response and Sur-Reply briefs (ECF Nos. 35 and 38, respectively). The Court provided preliminary constructions for the disputed terms four days before the hearing. The Court held the *Markman* hearing on June 10, 2022. ECF No. 54. During that hearing, the Court informed the Parties of the final constructions for the disputed terms. *Id.* This Order does not alter any of those constructions.

## I. DESCRIPTION OF THE ASSERTED PATENTS

Plaintiff asserts U.S. Patent No. 6,861,270, which is entitled “Method for manufacturing gallium nitride compound semiconductor and light emitting element.” The ’270 Patent is directed to improving the efficiency of light-emitting devices (“LEDs”) even when dislocations are present. ’270 Patent at 1:42–45.

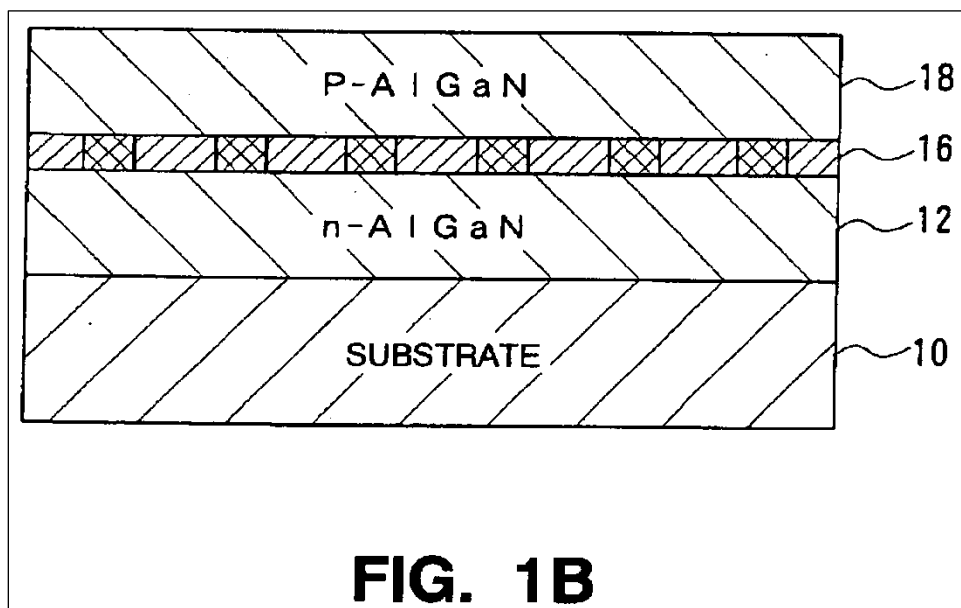
For gallium nitride (“GaN”) based LEDs, compositional fluctuations in the number of metal atoms, *e.g.*, aluminum (“Al”), gallium, and indium (“In”) lead to spatial fluctuations<sup>1</sup> in the band gap of the LED, which affects the efficiency of the LED. *See, e.g.*, Opening, Ex. 1 (Piner Declaration) at ¶ 17. The claimed invention exploits this phenomenon by depositing “composition material” on a portion of the surface of the GaN substrate. ’270 Patent at 1:50–53. The specification teaches that “the compositional ratio in the region where the composition material is present differs from that in the region where the composition material is not present.” *Id.* at 1:63–65. The specification further teaches that “[d]ue to the difference in the compositional ratio, a spatial fluctuation is produced in the band gap.” *Id.* at 1:65–66.

Figures 1A and 1B depicts a method of manufacturing a GaN-based semiconductor according to one embodiment. *Id.* at 3:9–12. Figure 1A depicts n-type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 12 on top of substrate 10. *Id.* at 3:35–37. Gallium droplets 14 are formed on top of n-type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 12. *Id.* at 3:39–40.



<sup>1</sup> A spatial fluctuation in the band gap is a change in the distance between the conduction and valence bands of the device; a smaller distance means that electrons and holes are more likely to recombine. ’270 Patent at 1:26–39, Figure 4. Recombination of electrons and holes results in light emission. *Id.* at 1:29–30.

Figure 1B depicts undoped  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  layer 16 on top of n-type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 12. *Id.* at 3:41–44. The specification describes that for areas within  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  layer 16 where gallium droplets 14 are present, the “solid phase composition of gallium within the undoped  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  layer 16 becomes high, and thus, a spatial fluctuation is formed in the band gap of the undoped  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  layer 16.” *Id.* at 3:44–48. Figure 1B also depicts that p-type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 18 is grown on top of  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  layer 16. *Id.* 3:55–58.



The specification describes that a LED fabricated in accordance with the present invention has an illumination intensity that is approximately 10 times the illumination intensity of a LED that that does not form gallium droplets 14. *Id.* at 3:62–67.

Finally, the specification describes that while Figures 1A and 1B depict using gallium for droplets 14, the claimed invention is not limited to using gallium, but could use other materials, *e.g.*, aluminum. *Id.* at 4:1–7.

## II. LEGAL STANDARD

The general rule is that claim terms are generally given their plain-and-ordinary meaning. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014), *vacated on other grounds*, 575 U.S. 959, 959 (2015) (“There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.”) (internal quotation omitted). The plain-and-ordinary meaning of a term is the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips*, 415 F.3d at 1313.

The “only two exceptions to [the] general rule” that claim terms are construed according to their plain-and-ordinary meaning are when the patentee (1) acts as his/her own lexicographer or (2) disavows the full scope of the claim term either in the specification or during prosecution. *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). The Federal Circuit has counseled that “[t]he standards for finding lexicography and disavowal are exacting.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). To act as his/her own lexicographer, the patentee must “clearly set forth a definition of the disputed claim term” and “‘clearly express an intent’ to [define] the term.” *Thorner*, 669 F.3d at 1365.

“Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent.” *Phillips*, 415 F.3d at 1317. “[D]istinguishing the claimed invention over the prior art, an applicant is indicating what a claim does not cover.” *Spectrum Int’l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1379 (Fed. Cir. 1998). The doctrine of prosecution disclaimer precludes a patentee from recapturing a specific meaning that was previously disclaimed during prosecution. *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). “[F]or prosecution disclaimer to attach, our precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable.” *Id.* at 1325–26.

Accordingly, when “an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

A construction of “plain and ordinary meaning” may be inadequate when a term has more than one “ordinary” meaning or when reliance on a term’s “ordinary” meaning does not resolve the parties’ dispute. *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008). In that case, the Court must describe what the plain-and-ordinary meaning is. *Id.*

“Although the specification may aid the court in interpreting the meaning of disputed claim language . . . , particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988). “[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

An applicant’s statements during the PCT prosecution may also indicate the scope of the invention. *See Caterpillar Tractor Co. v. Berco*, 714 F.2d 1110, 1116 (Fed. Cir. 1983) (stating that when instructions to foreign counsel or representations to foreign patent offices made by an applicant during prosecution of a corresponding foreign application provide “relevant evidence” with respect to claim interpretation, such information “must be considered.”); *see also Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1374 (Fed. Cir. 2005) (finding that the applicant’s own statements made before the European Patent office support the court’s holding).

Although extrinsic evidence can be useful, it is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)). Technical dictionaries may be helpful, but they may also provide definitions that are too broad or not indicative of how the term is used in the patent. *Id.* at 1318. Expert testimony may also be helpful, but an expert’s conclusory or unsupported assertions as to the meaning of a term are not. *Id.*

### III. LEGAL ANALYSIS

Terms #1 and #3 were previously construed by Judge Davila in the Northern District of California in a prior lawsuit filed by Plaintiff on the ’270 Patent. Claim Construction Order, *Nitride Semiconductors Co., Ltd. v. RayVio Corporation*, Case No. 5:17-cv-02952-EJD (N.D. Cal. May 11, 2018) (“*RayVio Order*” or “Judge Davila’s Claim Construction Order”).

#### A. Term #1: “forming . . . on” / “forming on” / “formed on”

Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“forming . . . on” / “forming on” / “formed on”  ’270 Patent, Claims 2, 9	“Form[ing/ed] directly or indirectly above”	“form(ing/ed) in contact with and above”

#### **The Parties’ Positions:**

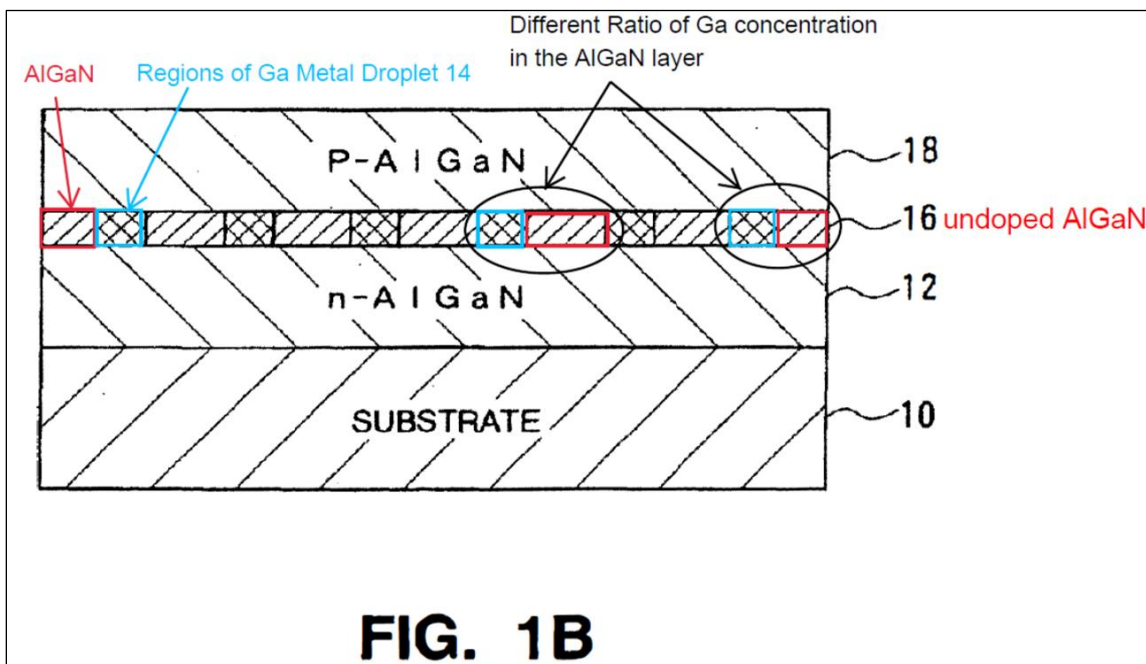
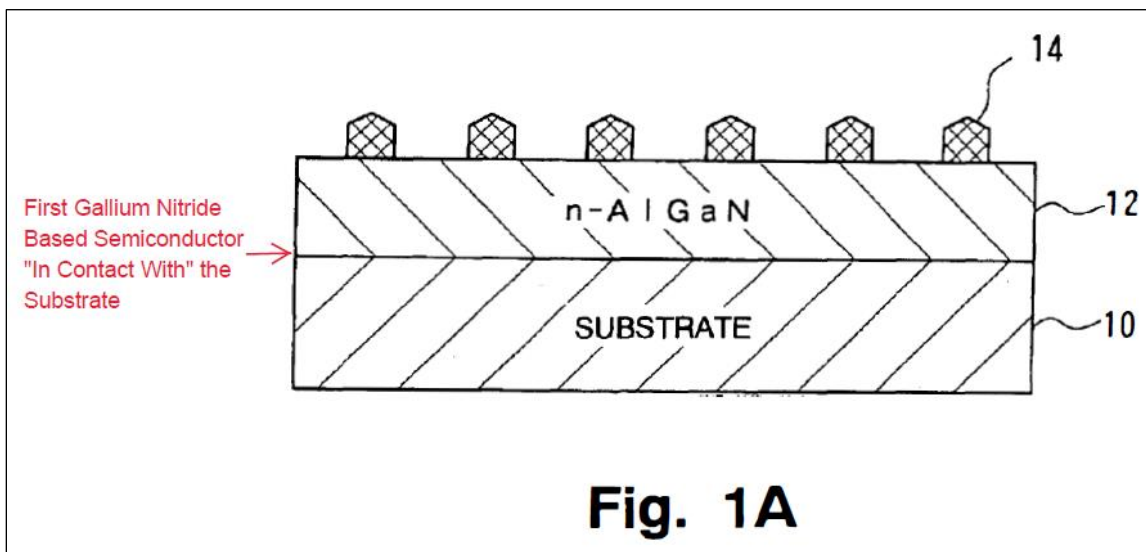
The dispute is whether “forming on” / “formed on” requires direct contact with the layer below (Defendants’ position) or the contact can be indirect, *e.g.*, there is an intervening layer, (Plaintiff’s position).

Defendants contend that their proposed construction is consistent with the ordinary meaning of the word “on.” Opening at 6. Defendants also contend that their proposed construction is consistent with Judge Davila’s Claim Construction Order. *Id.* (quoting *RayVio* Order at 11 (construing “forming on” as “form(ing/ed) in contact with and above”)). Defendants contend that, by contrast, Plaintiff’s proposed construction is the same one that Judge Davlia previously rejected as being contrary to the entire purpose of the invention. *Id.* (quoting *RayVio* Order at 11 (“Put simply, structure is important—it is the inventive crux of the claimed solution. The addition of unnamed intervening layers could change this structure and, as such, the very nature of the solution.”))).

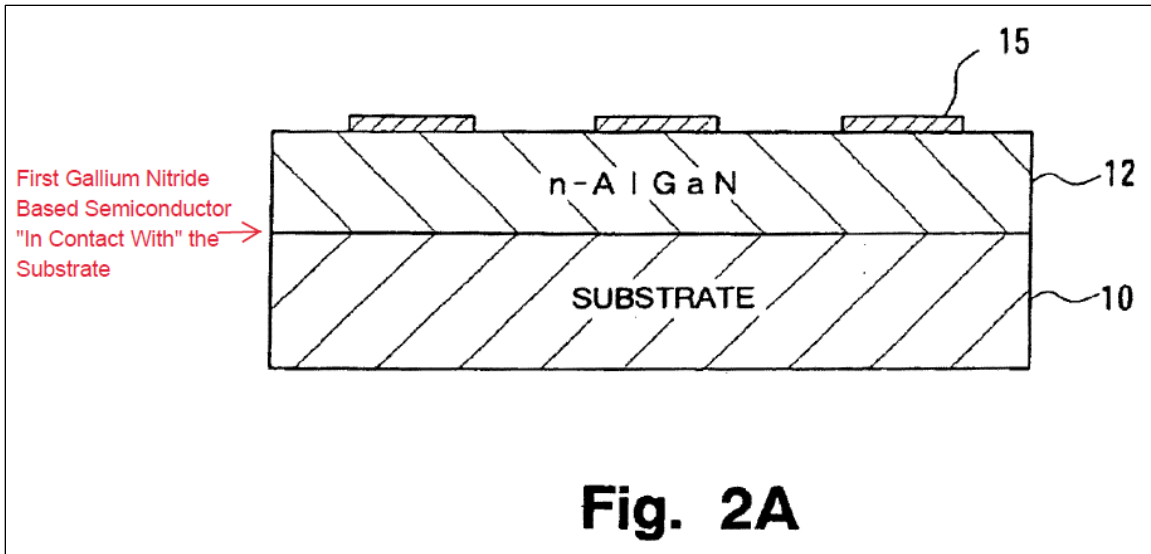
Defendants contend that the claims and specification consistently use “on” to mean “in contact with and above.” *Id.* at 7–11. With respect to the former, Defendants contend that the claim term appears three times in Claims 2 and 9, namely, to describe “(1) forming a first GaN based semiconductor on a substrate, (2) forming a composition material on a discrete area of the first GaN based semiconductor, and (3) forming a second GaN based semiconductor on the first GaN based semiconductor onto which the composition material is formed.” *Id.* at 7. Defendants contend that for each of these three instances, “the written description, figures, and claim language require a succeeding layer to be in contact with and above each preceding layer.” *Id.* (quoting *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1370-71 (Fed. Cir. 2016) (“[W]hen a patent ‘repeatedly and consistently’ characterizes a claim term in a particular way, it is proper to construe the claim term in accordance with that characterization.”)) (emphasis in Defendants’ brief).

With respect to the first instance, *i.e.*, “(1) forming a first GaN based semiconductor on a substrate,” Defendants contend that Figures 1A, 1B, and 2A illustrate that the GaN layer is in contact with the substrate such that there are no intervening layers. *Id.* 7–8 (citing ’270 Patent at

3:34–37 (“as shown in FIG. 1A, an n type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 12 is grown on a substrate 10 such as, for example, sapphire at a temperature of  $1050^\circ\text{C}$ .”); 4:13–14 (“as shown in FIG. 2A, an n type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 12 is grown on a substrate 10 at a temperature of  $1050^\circ\text{C}$ .”); Figures 1A, 1B, and 2A (annotations below added by Defendants)).







With respect to the second instance, *i.e.*, “(2) forming a composition material on a discrete area of the first GaN based semiconductor,” Defendants contend that the specification recites “trimethyl gallium and nitrogen gas are supplied to the substrate for few seconds at a temperature of 800-1050° C., to thereby form on the n type  $\text{Al}_y\text{Ga}_{1-y}\text{N}$  layer 12 using MOCVD discrete gallium droplets 14 having a diameter of approximately 10-500 nm.” *Id.* at 9 (quoting ’270 Patent at 3:36–40 (emphasis in Defendants’ brief)). Defendants contend that Figure 1A shows that gallium droplets 14 are formed in contact with and above the n-type AlGaIn layer 12. *Id.* at 9–10. Defendants contend that “to form the droplets on less than a total area of a surface of the first GaN based semiconductor layer, that material must be in contact with and above that surface.” *Id.* at 10.

With respect to the third instance, *i.e.*, “(3) forming a second GaN based semiconductor on the first GaN based semiconductor onto which the composition material is formed,” Defendants contend that Figure 1B depicts that “the second GaN based semiconductor layer 16 is formed on top of the first GaN based semiconductor layer 12 and the composition material (the gallium metal droplets 14) in order to intentionally create a varied compositional ratio in the second GaN based

semiconductor layer 16.” *Id.* at 10 (citing ’270 Patent at Abstract, 1:59-66). Defendant contends that the different ratio of gallium concentration in the AlGaIn layer (where gallium metal droplets 14 are) “produces a spatial fluctuation in the band gap and light emitting efficiency is increased.” *Id.* at 11.

Defendants contend that “[a]ny intervening layer between the second GaN based semiconductor layer and the composition material that is formed on the first gallium nitride based semiconductor, as [Plaintiff’s] proposal would allow, would impede the very intent of the invention.” *Id.*

Defendants contend that, on the other hand, there is no embodiment in the specification that describes “forming on” as indirect. *Id.* at 9.

Defendants’ expert opines that a POSITA would understand that “formed on” requires direct contact. *Id.* at 11–12 (Opening, Ex. 1 (Piner Declaration) at ¶ 25). Defendant relies on its expert’s declaration to argue that (1) the sequence of layers in a semiconductor device is critical to the performance / application and (2) “form[ing/ed] on” in the context of the claims means to be in contact with and above. *Id.* at 12.

Defendants contend that “formed on” cannot include indirect contact because then “the composition material could not possibly occupy ‘less than a total area of’ the first surface[,]” as the composition material would not occupy any area of the first surface. *Id.* at 12.

In its response, Plaintiff notes that this Court, in *Epistar Corp. v. Lowe’s Companies Inc.*, No. 6:20-cv-00420-ADA, ECF No. 47 at 4 (Feb. 10, 2021) construed this exact term as “plain-and-ordinary meaning.” Response at 4.

Plaintiff contends that the claim language does not include the “contact” restriction. *Id.* Plaintiff also contends that the specification does not use the word “contact” or provide a definition

for this term. *Id.* Plaintiff contends that Judge Davila did not identify any lexicography or disclaimer, which are the only two permissible exceptions to a plain-and-ordinary construction. *Id.* at 5 (citing *Thorner*, 669 F.3d at 1365). Plaintiff's expert opines that the '270 Patent uses "formed on" consistent with its ordinary meaning, *i.e.*, formed directly or indirectly above. *Id.* (citing Response, Ex. 5 (Doolittle Declaration) at ¶¶ 64–78).

With respect to Defendants' argument that the patent does not depict intervening layers between certain layers, *e.g.*, layer 12 and the substrate 10, Plaintiff contends that a POSITA would understand that there are intermediate layers (*e.g.*, "buffer" layers), and that the figures are simplified and do not show all detail. *Id.* (citing Response, Ex. 5 (Doolittle Declaration) at ¶¶ 23–26; *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1536 (Fed. Cir. 1987); *In re Gay*, 309 F.2d 769 (CCPA 1962)).

With respect to Defendants' argument that "there is no embodiment in the patent that mentions forming a semiconductor layer 'indirectly above' the substrate, with intervening layers in between," Plaintiff agrees that the specification does not use the words "indirectly above," but Plaintiff also contends that the specification contains a passage that describe that multiple layers are "formed on" the substrate. *Id.* at 6 (quoting '270 Patent at 1:14–20). Plaintiff contends that Figure 3 depicts an example where multiple AlGaIn layers 20 and multiple GaN layers 22 are "formed on" a sapphire substrate. *Id.* (citing '270 Patent at 1:18–19, Response, Ex. 5 (Doolittle Declaration) at ¶¶ 12–13, 23–26).

Plaintiff also contends that Judge Davila miscategorized the prosecution history as extrinsic evidence. *Id.* at 6 (citing *RayVio* Order at 11). Plaintiff contends that Judge Davila minimized that Examiner repeatedly described layers being "formed on" the substrate even though the

formation was indirect. *Id.* at 7. Plaintiff contends that those statements, by contrast, indicate how a POSITA would understand the claim term. *Id.*

Plaintiff finally contends that other intrinsic evidence (EP 0961328 A2) makes clear that “formed on” do not exclude intervening layers, such as buffer layers. *Id.* at 8 (citing Response, Ex. 5 (Doolittle Declaration) at ¶ 76–77).

In their reply, Defendants contend that the claim language and specification make clear that:

(1) the first GaN based semiconductor layer (12) must be in contact with the substrate (10), (2) the composition material (14) must be in contact with the first GaN based semiconductor layer, and (3) the second GaN based semiconductor layer (16) must be in contact with the first GaN based semiconductor layer on which the composition material is formed.

Reply at 1 (citing ’270 Patent at Figures 1A, 1B). Defendants contend that the “presence of an intervening layer between composition material (14) and the second GaN based semiconductor layer (16) would frustrate the very purpose of the invention” because that would not create a difference in the compositional ratio in that layer. *Id.* at 2 (citing ’270 Patent at 1:59–66) (emphasis in Defendants’ brief).

With respect to the Examiner’s prosecution statements and the European patent listed on the face of the patent, Defendants first contends that these are both “extrinsic evidence.” *Id.* at 2 (e.g., “The Extrinsic Evidence Relied on by Nitride is Inapposite.”). With respect to Examiner’s statements regarding a prior art reference (“Marx”), Defendants contend that the “Federal Circuit has rejected the consideration of such statements as intrinsic evidence, noting that it is ‘hesitant to rely too heavily on examiner statements over those of the patentee.’” *Id.* (quoting *3M Innovative Properties*, 725 F.3d at 1332). Defendants contend that Judge Davila “properly rejected this very same argument,” and that Judge Davila found that Examiner’s statements are extrinsic evidence.

*Id.* (emphasis in Defendants’ brief). Defendants further contend that the Marx reference describes successive layers as being “disposed on” the previous layer and that there is no suggestion that layers could be “indirectly ‘disposed on’,” which Defendants contend supports their proposed construction. Reply at 2–3 (emphasis in Defendants’ brief) .

Defendants further contend that prior art is not helpful in understanding what the inventor meant by “formed on” / “forming on.” *Id.* at 3–4. Defendants contend that even if it were intrinsic evidence, “it cannot be relied on to alter the meaning of claim terms that are supported by a reading of the terms themselves, along with the specification.” *Id.* at 4 (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584–85 (Fed. Cir. 1996)).

In its sur-reply, Plaintiff contends that Defendants do not allege lexicography or disclaimer. Sur-Reply at 1. That said, Plaintiff contends that Defendants incorrectly imply that the patentee defined the meaning of this term. *Id.* Plaintiff further contends that the passage Defendants cite (1:59–66) in support of their proposed construction requiring direct contact does not use the term “direct contact.” *Id.* Plaintiff contends that Defendants’ argument that an intervening layer would “frustrate the purpose of the invention” is circular reasoning as it “imposes its construction on the specification,” then “reads the specification in view of its construction,” and finally “asserts that the specification supports its view.” *Id.*

With respect to Defendants’ argument that Examiner’s prosecution statements are “extrinsic” evidence, Plaintiff contends that Defendants are completely wrong. Sur-Reply at 2–3. Plaintiff contends that Defendants’ citation to *3M Innovative Properties* does not support Defendants’ argument that Examiner’s statements are “extrinsic” evidence as there is no “statement, holding, dicta, or quotation from *3M*, or any other case, that statements made by the examiner [d]uring prosecution concerning cited prior art are **not** intrinsic evidence.” *Id.* (emphasis

in Plaintiff's brief). Plaintiff contends that, by contrast, "[t]he prosecution history, which we have designated as part of the 'intrinsic evidence,' consists of the **complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent.**" *Id.* (quoting *Phillips*, 415 F.3d at 1317 (emphasis in Plaintiff's brief)).

### **The Court's Analysis:**

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. **First**, the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347. **Second**, Defendant does not expressly allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning. *Thorner*, 669 F.3d at 1365.

**Third**, the claims do not describe that "formed on" requires direct contact. **Fourth**, the specification also does not describe that "formed on" requires direct contact. By contrast, the specification describes a situation where some layers that are not in direct contact with the substrate are still "formed on" the substrate. '270 Patent at 1:14–20 ("In recent years, AlGa<sub>N</sub> and AlGa<sub>N</sub>/Ga<sub>N</sub> quantum well superlattices (MOW) or the like have come to be known as materials for light emitting elements, particularly as materials for elements emitting light in the ultraviolet band. Typically, these materials are formed on a sapphire substrate..."). This passage, which appears in the "Background of the Invention" section of the patent, describes that the plain-and-ordinary meaning of "formed on" includes indirect contact with the substrate.

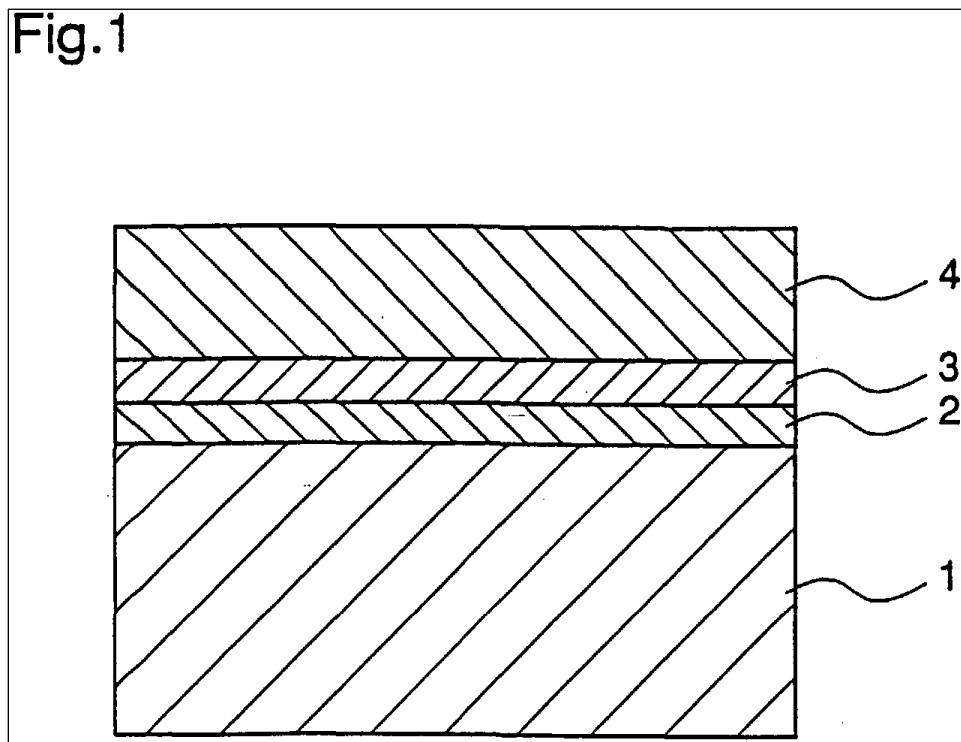
*Fifth*, other intrinsic evidence, *i.e.*, Examiner’s prosecution statements, confirms that the scope of this term is not limited to direct contact. As a preliminary point, Defendants are incorrect to assert that this evidence is extrinsic evidence. With respect to the former, *Phillips* clearly recites that “[t]he prosecution history, which we have designated as part of the ‘intrinsic evidence,’ consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent.” 415 F.3d at 1317. Defendants’ reliance on *3M Innovative Properties* is misplaced as the Federal Circuit in that case only described that Examiner’s statements are not as important as Applicant’s statements. *3M Innovative Properties*, 725 F.3d at 1332 (“we rest on the statements made by the patentee over conflicting statements of an examiner because it is the patentee’s words that define the claim.”). Furthermore, the passage that Defendants cite does not use the words “intrinsic evidence” or “extrinsic evidence,” let alone categorize Examiner’s statements within the latter. *See, e.g., id.* Therefore, contrary to Defendants’ assertion, Examiner’s statements are intrinsic evidence.

Similarly, it is black letter patent law that prior art references cited on the face of the patent are also intrinsic evidence. *V-Formation, Inc. v. Benetton Grp. SpA*, 401 F.3d 1307, 1311 (Fed. Cir. 2005) (“This court has established that ‘prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence.’”); *Phillips*, 415 F.3d at 1317 (“[t]he prosecution history, which we have designated as part of the ‘intrinsic evidence,’ consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent.”). Therefore, again contrary to Defendants’ assertion, EP 0961328 A2 is intrinsic evidence.<sup>2</sup>

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<sup>2</sup> The Court is surprised that Defendants would make such an assertion as it is black letter patent law that both Examiner’s statements and prior art cited on the face of the patent are intrinsic evidence. While the Court is surprised that Defendants would make such an obviously legally erroneous argument, the Court assumes that this

As described above, while not as important as Applicant's prosecution statements, Examiner's prosecution statements are evidence of how the POSITA would understand this term. *3M Innovative Properties*, 725 F.3d at 1332 ("this court previously explained that an examiner's statement during reexamination was, at most, representative of how one of skill in the art would understand the term."). Here, Examiner understood that the Marx reference disclosed that one layer may be "formed on" another layer even though there is no direct contact between the two layers. *See, e.g.*, Response, Ex. 2 at 2. For example, Examiner described that Figure 1 in the Marx reference depicts "forming" a gallium nitride compound semiconductor 3 on substrate 1, even though layer 2 separates gallium nitride compound semiconductor 3 and substrate 1. *Id.* ("forming a first gallium nitride compound semiconductor 3 on a substrate 1[.]").



EP 0779666 A2 at Figure 1.

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was a simply an elementary mistake, rather than an attempt to mislead the Court by completely misrepresenting basic patent law.



On the other hand, the Court does not find that EP 0961328 A2 describes that “formed on” includes indirect contact as the passage Plaintiff cites (§ [0002]) does not use the words “formed,” or a variation thereof.

Therefore, other intrinsic evidence, *i.e.*, Examiner’s prosecution statements, confirms that the scope of this term is not limited to direct contact.

*Sixth*, Defendants heavily rely on the figures in the patent, specifically Figures 1A, 1B, and 2A, which depict two layers being in direct contact where one layer “formed on” the other layer. *See, e.g.*, Opening at 7–8. But these figures are merely embodiments and “it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim*, 358 F.3d at 913.

*Seventh*, Defendants also argue that “formed on” cannot include indirect contact because then “the composition material could not possibly occupy ‘less than a total area of’ the first surface[,]” as the composition material would not occupy any area of the first surface as required by Claim 2. Opening at 12. The Court disagrees because Defendants’ argument presupposes that “occupy” requires direct contact. Furthermore, even if there is an intervening layer, one can easily determine the surface area of the composition material and the area of the first surface, and then calculate whether the former is less than the latter.

Therefore, for the reasons described above, the Court’s final construction for “forming” / “formed on” is plain-and-ordinary meaning.

## **B. Term #2: “substrate”**

<b>Term</b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
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#2: “substrate”  '270 Patent, Claims 2, 9	“Base layer or other surface upon which the gallium nitride based semiconductor is deposited, etched, attached, or otherwise prepared or fabricated”	“foundation or base material, without a buffer layer, on which a semiconductor layer is deposited”
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### **The Parties' Positions:**

The dispute is whether the substrate may contain additional layers, *e.g.*, a buffer layer, (Plaintiff's position) or whether it is limited to the bare substrate (Defendants' position).

Defendants first contend that Plaintiff's proposed construction cannot be correct because the specification does not contain the term “buffer layer” and does not suggest that the invention can include a buffer layer. Opening at 16.

Defendant contends that during an IPR, Plaintiff differentiated the Ozaki prior art reference, which had a buffer layer on top of the substrate, as the latter does not disclose a buffer layer. *Id.* at 17. Defendants contend that these statements constitutes a clear disclaimer. *Id.*

Defendants contend that Plaintiff's “clear disclaimer was only premised on [Plaintiff's] adoption, *arguendo*, of the District Court's claim constructions in the *RayVio* case” is “misleading.” *Id.* at 17–18. Defendants contend that Plaintiff's arguments distinguishing the Ozaki prior art reference do not state they are based on any particular claim construction. *Id.* at 18. Rather, Defendants contend that Plaintiff's IPR arguments are based on the “simple distinction between the claimed invention in the '270 Patent not having a buffer layer, as opposed to the Ozaki prior art, which has a buffer layer.” *Id.*

In its response, Plaintiff contends that a substrate is “simply a collection of layers or materials forming a base (or surface)[.]” Response at 15. Plaintiff contends that it includes the phrase “the gallium nitride based semiconductor is deposited, etched, attached, or otherwise

prepared or fabricated” in its proposed construction to help a jury understand the meaning of the term. *Id.*

Plaintiff contends that the claims are written in “comprising” language, and thus does not exclude buffer layers. *Id.* at 16. Plaintiff contends that the patentee did not act as his own lexicographer nor disavow claim scope to exclude buffer layers. *Id.*

Plaintiff contends that file history uses “substrate” in a manner consistent with Plaintiff’s proposed construction. *Id.* More specifically, Plaintiff contends that Examiner described layer 3 as being formed on the substrate even though there was an intermediate stress-absorbing layer. *Id.* (citing Response, Ex. 8 at Figure 1, 9:8–16). Plaintiff further contends that the Marx prior art reference describes that “layer 4” is formed on the substrate, even though there were at least two other intervening layers between layer 4 and the substrate. *Id.* at 17. Plaintiff contends that European ’328 Application “makes clear that a POSA would understand that when the ’270 patent uses substrate it does not exclude buffer layers.” *Id.*

Plaintiff contends that its proposed construction is consistent with extrinsic evidence, namely, that dictionary definitions describe that a substrate is the “base layer” or just the surface where materials can be deposited. *Id.* at 18.

With respect to Defendants’ IPR disclaimer argument, Plaintiff contends that there was no disclaimer as Plaintiff presented its arguments while using Judge Davila’s construction of “forming on” / “formed on.” *Id.* (citing Response, Ex. 19 (POR) at 12). In other words, Plaintiff contends that its arguments were based on the assumption that contact was required. *Id.*

In their reply, with response to Plaintiff’s argument that its IPR arguments were based on Judge Davila’s construction of “forming on” / “formed on,” Defendant contends that is a “fiction” as Judge Davila did not construe “substrate.” Reply at 4 (citing Opening, Ex. 5 at 18, 23, 30).

Rather, at least according to Defendant, the entire discussion was about the prior art and the invention, and that the Ozaki Reference included a buffer layer whereas the claimed invention did not. *Id.* at 5. With respect to Plaintiff's arguments regarding the Marx prior art reference, Defendants contend that the Marx reference does not treat the substrate as another layer. *Id.* With respect to the '328 Application, Defendants contend that while "the '328 Application noted that the use of 'buffer techniques' were known in the prior art in connection with sapphire substrates, the claimed invention in the application disclosed the use of GaN substrates, which do not require a buffer layer." *Id.* 5–6. With respect to Plaintiff's dictionary definitions, Defendant contends that the dictionary definitions support its proposed construction because they describe the substrate as one layer, like Defendant's proposed construction does. *Id.* at 6.

In its sur-reply, with respect to the Marx reference, Plaintiff contends that Defendant is wrong to say that Examiner and the Marx reference did not describe the "substrate" as "layer 1." Sur-Reply at 8 (citing Sur-Reply, Appendix A). With respect to Defendants' IPR argument, Plaintiff contends that Defendants' argument that Judge Davlia did not construe "substrate" (but construed "forming on / formed on") is flawed. *Id.* More specifically, Plaintiff contends that Judge Davila's construction for those terms required direct contact and thus excluded the presence of a buffer layer. *Id.* As such, Plaintiff contends that the "purported disavowal statements were made with the assumption that contact was required," which excluded the possibility of a buffer layer. *Id.* Based on that assumption, Plaintiff contends that there is no disclaimer or disavowal.

With respect to Defendants' argument that Plaintiff's dictionary definitions support Defendants' proposed construction, Plaintiff contends that the dictionary definitions do not describe that the substrate is limited to being one layer. *Id.* at 9.

### **The Court's Analysis:**

After reviewing the parties' arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. **First**, the "heavy presumption" is that terms should be construed according to their plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347.

**Second**, the Court agrees with Plaintiff that the patent owner did not make a disclaimer during the IPR. Rather, Judge Davila construed that "forming on" a substrate required direct contact with the substrate, thus excluding the possibility of an intervening buffer layer. *RayVio* Order at 11. The patent owner, in its Patent Owner Preliminary Response, adopted Judge Davila's construction for the purposes of the IPR. Response, Ex. 19 at 12. But given that the patent owner premised its IPR arguments on a construction that it did not advance—either before Judge Davila or before this Court—the Court concludes that such conditional IPR statements do not meet the "exacting" standard necessary for finding disavowal. *Hill-Rom Servs.*, 755 F.3d at 1371. Furthermore, Defendant have not provided a case that stands for the proposition that a patent owner made a disclaimer based on arguments it made while adopting an adverse construction for the purposes of the IPR.

Because there is no disclaimer and Defendants do not allege lexicography, Defendants have not shown that one of the exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning applies. *Thorner*, 669 F.3d at 1365.

**Third**, the intrinsic evidence indicates that the plain-and-ordinary meaning does not restrict a substrate to a single layer. For example, the Marx prior art reference—which is intrinsic evidence for the reasons described in Term #1—describes that the substrate may comprise multiple layers, including a buffer layer. More specifically, the Marx prior art reference describes that "layer 4" is

formed on “substrate 1,” even though there were at least two other intervening layers between layer 4 and substrate 1. EP 0779666 A2 at 11:41–45 (“Further, since the GaAs stress absorbing layer 2, the low temperature GaN buffer layer 3, and the GaN compound semiconductor layer 4 are formed on the Si substrate 1 by any of MOCVD, MBE, and CBE, the semiconductor device is suitably fabricated.”). In the same way, Examiner understood that layer 3 could be formed on “substrate 1” even though there was an intervening layer between the two. Opening, Ex. 2 at NS00351792.

**Fourth**, the dictionary definitions Plaintiff provides describes that the substrate is “the base layer” or “any surface” upon which something is deposited. Response, Ex. 10 at 755, Ex. 11 at 637. Neither definition limits the substrate to a single layer and/or excludes buffer layers. These definitions are entirely consistent with the intrinsic evidence and also provide further evidence that the term has a plain-and-ordinary meaning.

Therefore, for the reasons described above, the Court’s final construction for “substrate” is plain-and-ordinary meaning.

**C. Term #3: “a spatial fluctuation is created in the band gap by variation in the compositional ratio in the second gallium nitride based semiconductor created by the composition material” / “a second gallium nitride based semiconductor layer having a varied compositional ratio”**

Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a spatial fluctuation is created in the band gap by variation in the compositional ratio in the second gallium nitride based semiconductor created by the composition material”  ’270 Patent, Claim 2	“Continuous widening and narrowing of the band gap laterally within the second gallium nitride based semiconductor is created by changes in the ratio of the elements in the second gallium nitride based	“intentionally creating a widening and narrowing of the band gap within the second gallium nitride based semiconductor layer by forming the composition material to change the ratio of the elements within the

“a second gallium nitride based semiconductor layer having a varied compositional ratio”  ’270 Patent, Claim 9	semiconductor created by the composition material”  “A second gallium nitride based semiconductor layer having changes in the ratio of its elements”	second gallium nitride based semiconductor layer.”  “the ratio of the elements within a second gallium nitride based semiconductor layer is intentionally changed by the composition material.”
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### **The Parties’ Positions:**

Judge Davila construed this term as “continuous widening and narrowing of the band gap laterally within the second gallium nitride based semiconductor is created by changes in the ratio of the elements in the second gallium nitride based semiconductor created by the composition material.” Relatedly, he also construed “composition material” to mean “material composed of some, but not all, of the elements of the first gallium nitride based semiconductor.” *RayVio* Order at 27. Judge Davila concluded that “During prosecution, the applicant made a disclaimer limiting ‘light emitting layer’ to having a varying compositional ratio within the light emitting layer.” *Id.* at 27–28.

The parties’ proposed constructions differ in two key respects: 1) whether “intentionally” should be included in the construction (Defendants contend that it should be) and 2) whether the Court’s construction should keep “continuous” from Judge Davila’s construction (Plaintiff contends that it should be).

In its opening, with respect to “intentionally,” Defendant contends that this should be added because the applicant distinguished the Marx reference by saying that the present invention was realized unseen advantages by “intentionally creating spatial fluctuation.” Opening at 13–14 (quoting Opening, Ex. 4 at 7). Defendants also contend that Applicant said the same thing in regards to another prior art reference (Nagahama). *Id.* at 14. (quoting Opening, Ex. 4 at 8 (“Thus,

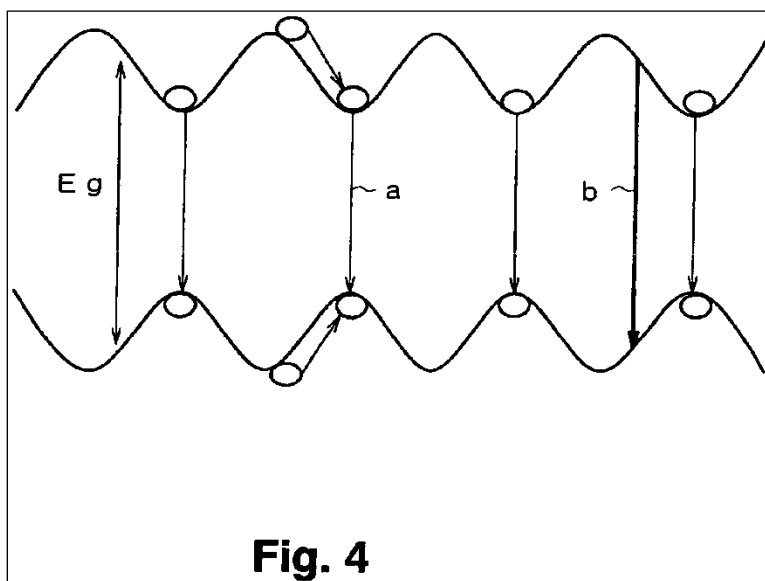
by *intentionally* creating spatial fluctuation in the band gap of a light emitting layer, the present invention realizes heretofore unseen advantages over prior art methodologies.”) (emphasis in original). Defendants contends that “[w]hen a patentee identifies a problem, criticizes the prior art for not solving it, and then provides a solution, the claims cannot be construed to encompass the problem.” *Id.* (citing *Openwave Sys. Inc. v. Appel, Inc.*, 808 F.3d 509 (Fed. Cir. 2015)).

With respect to “continuous,” Defendants contend that the “specification explicitly defines ‘spatial fluctuation’ as ‘widening and narrowing of the band gap’,” and that nothing in the intrinsic evidence supports adding “continuous.” *Id.* (quoting ’270 Patent at 3:53-55 (“Such compositional variation produces a spatial fluctuation in the band gap, that is, widening and narrowing of the band gap.”)).

In its response, with respect to “intentional,” Plaintiff contends that it is improper to add a *mens rea* requirement, as it “violates a fundamental tenet of patent law[.]” Response at 11 (citing *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1576 n.2 (Fed. Cir. 1996); *In re Seagate Technology, LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007); *Intel Corp. v. U.S. Int’l Trade Comm’n*, 946 F.2d 821, 832 (Fed.Cir.1991)). Plaintiff contends that adding “intentional” requires a “clear and unmistakable disclaimer,” but that there is no disclaimer as the passage from the prosecution history describes express steps that create the compositional variation. *Id.* at 11–12. Plaintiff contends that this was necessary to differentiate the Marx reference which did not describe any of these steps and that “intentionally” refers to the specific steps that were not present in Marx. *Id.* at 12–13. Plaintiff also contends that adding a subjective element may render a claim indefinite. *Id.* at 13 (citing *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005)).



With respect to “continuous,” Plaintiff contends that Figure 4 depicts that the “widening and narrowing of the band gap is continuous, which is consistent with the ordinary meaning of fluctuate/fluctuation.” Response at 10 (citing dictionary definitions).



Plaintiff further contends that “during prosecution the applicant distinguished vertical changes in composition between layers from the lateral variations within a layer (*e.g.*, in Figs. 1B, 2B, and 3 of the '270 patent) that create the spatial fluctuation in the band gap.” *Id.* at 11 (citing Response, Ex. 2 at NS00351818–20).

Plaintiff further contends that not all compositional fluctuations will lead to band gap fluctuations, but rather only those on a large scale (hundreds of nanometers to microns). *Id.* at 14. Plaintiff contends that the specification describes that “spatially large compositional fluctuations (on the order of microns) that can only be described as smooth and continuous, not abrupt.” *Id.*

In their reply, with respect to “intentional,” Defendants contend that rather than adding a *mens rea* requirement, including the word “intentional” “makes clear” that “specific, affirmative steps must be taken in order to create the spatial fluctuation.” Reply at 7. Defendants further contend that the inventor used the word “intentional” multiple times during prosecution, and that

was one element that distinguished it from the Marx prior art reference. *Id.* (quoting Opening, Ex. 4 at 7). Defendants contend that “intentional” is necessary as band gap fluctuation occurs naturally and was well-known before the invention of the ’270 Patent, while the claimed invention is directed towards enhancing the spatial fluctuation beyond what is inherently present. *Id.* at 8.

With respect to “continuous,” Defendants contend that the parties agree that “spatial fluctuation in the band gap” is a “widening and narrowing of the band gap.” *Id.* (citing ’270 Patent at 3:53–55). On the other hand, Defendants contend that there is no intrinsic evidence to support adding a “vague” word like “continuous.” *Id.* at 8–9.

In their sur-reply, with respect to “intentional,” Plaintiff first contends that that Defendants fail to explain how its construction does not improperly delve into the mind of the product designer. Sur-Reply at 4. Plaintiff again contends that there is no “clear and unmistakable” disclaimer to justify adding “intentionally;” by contrast, Plaintiff contends that the portions of the prosecution history that Defendants cite to describe “specific technical steps that result in spatial fluctuation.” *Id.* at 5. Plaintiff contends that the Marx prior art reference is “absolutely silent with respect to the concept of creating a variation in a compositional ratio of a light emitting layer, as required by the claims of the present invention.” *Id.* (quoting Response, Ex. 2 at NS00351817, NS00351818–20). Based on that, Plaintiff contends that the prosecution history does not disclose a “clear and unmistakable” disclaimer. *Id.*

With respect to “continuous,” Plaintiff contends that not all compositional fluctuations lead to fluctuations in the bandgap, rather, only the “large scale” (hundreds of nanometers to microns) compositional fluctuations will lead to band gap fluctuations. *Id.* at 6. Plaintiff contends that the specification describes that “large compositional fluctuations (on the order of microns) that can only be described as smooth and continuous, not abrupt.” *Id.* Plaintiff contends that during

prosecution Applicant distinguished “vertical changes in composition between layers from the lateral variations within a layer (*e.g.*, in Figs. 1B, 2B, and 3 of the ’270 patent) that create the spatial fluctuation in the band gap.” *Id.*

### **The Court’s Analysis:**

After reviewing the parties’ arguments and considering the applicable law, the Court finds that the proper construction for Term #3A (“a spatial fluctuation is created in the band gap by variation in the compositional ratio in the second gallium nitride based semiconductor created by the composition material”) is “widening and narrowing of the band gap laterally within the second gallium nitride based semiconductor is created by changes in the ratio of the elements in the second gallium nitride based semiconductor created by the composition material,” while the proper construction for Term #3B (“a second gallium nitride based semiconductor layer having a varied compositional ratio”) is “a second gallium nitride based semiconductor layer having changes in the ratio of its elements.”

With respect to “intentional,” the Court agrees with Plaintiff that it should not be included in the Court’s final construction for the reasons that follow. **First**, the Court agrees with Plaintiff that including a word like “intentional” into the Court’s final construction improperly adds a *mens rea* requirement that requires a POSITA to delve into the mind the designer. **Second**, patent infringement is a strict liability offense, so whether a potential infringer intentionally created the spatial fluctuation is irrelevant. *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1576 n.2 (Fed. Cir. 1996) (“Infringement itself, however, is a strict liability offense[.]”). **Third**, the Court agrees with Plaintiff that Applicant’s statements do not rise to the level of “clear and unmistakable” disclaimer as they could be reasonably interpreted as simply describing specific technical steps that result in

spatial fluctuation. *3M Innovative Props.*, 725 F.3d at 1326 (when “an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.”).

With respect to “continuous,” the Court agrees with Defendants that it should not be included in the Court’s final construction for the reasons that follow. **First**, the Court agrees Defendants that “continuous” is vague, which will make it difficult for a jury to apply. *Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1366 (Fed. Cir. 2004) (“The district court simply must give the jury guidance that can be understood and given effect by the jury once it resolves the issues of fact which are in dispute.”). **Second**, with respect to Plaintiff’s argument that “continuous” is necessary to differentiate the claimed invention from natural variation inherent in semiconductors, the Court concludes that it is unnecessary to include this word as the rest of the claim language provides sufficient differentiation. For example, Claim 1 (from which Claim 2 depends) recites forming both a first gallium nitride based semiconductor as well as a second gallium base semiconductor, and that the spatial fluctuation is created by variation in the compositional ratio in the second gallium nitride. *See also* ’270 Patent at 1:65–66 (“Due to the difference in the compositional ratio, a spatial fluctuation is produced in the band gap.”). The Court concludes that based on the claim language, a POSITA would understand that the claimed steps or limitations provide sufficient differentiation as compared to natural variation.

Therefore, for the reasons described above, the Court declines to include either “intentional” or “continuous” into its final construction and modifies Plaintiff’s proposed construction accordingly. The Court’s final construction for Term #3A (“a spatial fluctuation is created in the band gap by variation in the compositional ratio in the second gallium nitride based semiconductor created by the composition material”) is “widening and narrowing of the band gap laterally within the second gallium nitride based semiconductor is created by changes in the ratio

of the elements in the second gallium nitride based semiconductor created by the composition material” and for Term #3B (“a second gallium nitride based semiconductor layer having a varied compositional ratio”) is “a second gallium nitride based semiconductor layer having changes in the ratio of its elements.”

**D. Term #4: “the first gallium nitride based semiconductor and the second gallium nitride based semiconductor are AlGa<sub>N</sub>”**

Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“the first gallium nitride based semiconductor and the second gallium nitride based semiconductor are AlGa <sub>N</sub> ”  ’270 Patent, Claims 2, 9	No construction is necessary.	“the first / second gallium nitride based semiconductor is a single layer of AlGa <sub>N</sub> ”

**The Parties’ Positions:**

As was the case for Term #2 (“substrate”), the dispute between the parties whether the term is limited to a single layer as Defendant contends or may comprise several sub-layers as Plaintiff contends.

Defendants contend that “Claims 2 and 9 require that the first and second Ga<sub>N</sub> based semiconductors are AlGa<sub>N</sub>, which is a single layer.” Opening at 15. Defendants also contend that the claims and specification describe depositing one layer at a time. *Id.* (quoting ’270 Patent at 3:34–61). Defendants contend that Judge Davila concluded that “Claims 2 and 9 require that this ‘second gallium nitride base semiconductor’ is AlGa<sub>N</sub>—*i.e.*, a single layer.” *Id.*

In its response, Plaintiff contends that nothing in the claims or intrinsic evidence limits the first and second semiconductors to a single layer of AlGa<sub>N</sub>. Response at 14. Plaintiff contends that Claims 1 and 2 do not make reference to layers, so Defendants’ construction is inappropriate

for these claims. *Id.* Plaintiff contends that Claim 9 does not limit to single layers and/or additional layers or sub-layers. *Id.* Plaintiff contends that Claims 1 and 8, the independent claims that Claims 2 and 9 depend on, use the word “comprising,” so they are presumed to not exclude additional layers. *Id.* at 14–15.

Plaintiff contends that nothing in the specification suggests limiting the claims according to Defendants’ proposed construction and Defendants do not identify any disavowal. *Id.* at 15. Plaintiff finally contends that a POSITA would understand that the specification discloses sub-layers. *Id.* (citing Response, Ex. 5 at ¶¶ 16, 82, 110–12, Ex. 7 at ¶¶ 22–26).

Finally, with respect to Judge Davila’s comments, Plaintiff contends that his comments are merely dicta. *Id.* at 14.

In its reply, Defendants contend that their proposed construction is consistent with the intrinsic evidence and Judge Davila’s Claim Construction Order. Reply at 9. Defendants further contend that their proposed construction is consistent with the specification that describes a three-layer structure, each of which is an AlGaIn layer. *Id.* Defendants contend that Plaintiff entirely relies on extrinsic evidence (expert testimony) to overcome express disclosures in the patent. *Id.* at 9–10 (citing *Vitronics*, 90 F.3d at 1584, *Solvay S.A. v. Honeywell Int’l, Inc.*, 622 F.3d 1367, 1382 (Fed. Cir. 2010)).

In its sur-reply, Plaintiff contends that Defendants are incorrect “that (1) [Plaintiff] relies entirely on expert testimony, and (2) that [Plaintiff] attempts to contradict express disclosures in the ’270 Patent.” Sur-Reply at 7. With respect to the former, Plaintiff contends that it merely relies on expert testimony to support its plain-and-ordinary meaning construction. *Id.*

With respect to the latter, Plaintiff contends that the plain language of the claims do not limit the claimed invention to a single layer of AlGaIn, nor exclude additional layers or sub-layers.

*Id.* Plaintiff further contends that “[b]oth of the claims use the open-ended transition ‘comprising’ and thus are presumed to not exclude additional steps or structures.” *Id.* (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 811 (Fed. Cir. 1999)). Plaintiff contends, by contrast, that “there is nothing in the language of the claims or the intrinsic evidence that supports limiting the first and second semiconductors to a single layer of AlGaIn[.]” as recited in Defendants’ proposed construction. *Id.*

### **The Court’s Analysis:**

After reviewing the parties’ arguments and considering the applicable law, the Court agrees with Plaintiff and finds that the proper construction is plain-and-ordinary meaning for the reasons that follow. **First**, the “heavy presumption” is that terms should be construed according to their plain-and-ordinary meaning. *Azure Networks*, 771 F.3d at 1347. **Second**, Defendant does not expressly allege lexicography or disclaimer, which are the only two exceptions to the general rule that a term should be construed as having its plain-and-ordinary meaning. *Thorner*, 669 F.3d at 1365.

**Third**, Defendants’ proposed construction improperly attempts to limit the claimed invention to a disclosed embodiment. *Liebel-Flarsheim*, 358 F.3d at 913 (“[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.”).

**Fourth**, further bolstering the Court’s conclusion is that both claims are “comprising” claims, “which is generally understood to signify that the claims do not exclude the presence in

the accused apparatus or method of factors in addition to those explicitly recited.” *Vivid Techs.*, 200 F.3d at 811.

*Fifth*, the Court agrees with Plaintiff that Judge Davila’s comments are dicta. Furthermore, Judge Davila’s comments are not binding on this Court.

Therefore, for the reasons described above, the Court’s final construction for this term is plain-and-ordinary meaning.

**E. Term #5: “forming ... a composition material; and the composition material is one selected from Ga and Al”/ “a composition material ... formed ...; and the composition is one selected from Ga and Al”**

Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“forming ... a composition material; and the composition material is one selected from Ga and Al”/ “a composition material ... formed ...; and the composition is one selected from Ga and Al”  '270 Patent, Claims 2, 9	“Forming ... a composition material and the composition material is Ga or Al, not both / a composition material ... formed ... and the composition material is Ga or Al, not both”	“intentionally forming only a single element material of Ga or Al” / “a single element material of only Ga or Al is intentionally formed”

**The Parties’ Positions:**

The parties’ proposed construction differ in two key ways: 1) Whether the formation of the composition is “intentional” and 2) Whether the composition material is limited to only gallium or aluminum, or if it can include elements other than gallium or aluminum.

With respect to the first issue, the parties repeat their arguments from Term #3. *See, e.g.*, Opening at 19, Response at 19.

With respect to whether the composition material is limited to only gallium or aluminum, Defendants contend that the specification consistently describes the composition material as single



elements. Opening at 19 (quoting '270 Patent at Abstract (“When the undoped AlGa<sub>N</sub> layer is formed, droplets of Ga or Al are formed on the n type AlGa<sub>N</sub> layer.”), 3:39–40 (“discrete gallium droplets 14 having a diameter of approximately 10~500 nm”), 3:41–44 (“an undoped Al<sub>x</sub>Ga<sub>1-x</sub>N layer 16 is grown at a temperature of 1050° C. on the n type Al<sub>y</sub>Ga<sub>1-y</sub>N layer 12 onto which the gallium droplets (or microblocks of gallium) 14 are formed”)).

Defendants contend that it would not make sense for the composition material to be a compound as “it would have its own crystalline structure and could not cause a varied compositional ratio and could not cause changes in the ratio of the elements in the second Ga<sub>N</sub> based semiconductor.” *Id.* at 20.

Defendants contend that while analyzing terms in independent Claims 1 and 8, Judge Davila concluded that dependent Claims 2 and 9 are limited to single elements. *Id.*

In its response, Plaintiff contends that the language of the claims states that the substance is a “composition,” which would be understood to allow for multiple elements and does not exclude any unrecited substances. Response at 19 (quoting *Mars, Inc. v. H.J. Heinz Co., L.P.*, 377 F.3d 1369, 1377 (Fed. Cir. 2004) (“Since the term ‘mixture’ is entirely consistent with this construction, we hold that the ‘containing a mixture of lipid and solid ingredients’ limitation does not exclude the presence of additional, unnamed ingredients in the inner component of the claimed invention.”)).

Plaintiff contends that “neither the specification nor the prosecution history indicates that the applicant intended to restrict the ‘composition material’ to single elements. *Id.* at 19–20 (citing *Phillips*, 415 F.3d at 1323). Plaintiff contends that, rather, the specification indicates that single elements can become part of the AlGa<sub>N</sub> composition. *Id.* at 20. Plaintiff further contends that “certain embodiments disclose that during the manufacturing process gallium droplets are formed,

once they are formed, they become part of the AlGaIn composition.” *Id.* (citing ’270 Patent at 3:41–47). Plaintiff contends that this undercuts Defendants’ argument that the “composition material must be a single element because it could not otherwise change the compositional ratio of the second semiconductor” because “such a ratio change cannot be accomplished if the materials remain as individual elements.” *Id.*

In its reply, Defendants state that they do not disagree with Plaintiff’s argument that “the Gallium (or Aluminum) droplets described in the specification—*i.e.*, the “composition material”—combine with the second AlGaIn layer that is grown on the first AlGaIn layer on which the droplets are formed, in order to alter the compositional ratio of the second AlGaIn layer.” Reply at 10. Defendants contend, however, that “this does not alter the fact that the ‘composition material’—not materials—in Claims 2 and 9 ‘is one selected from Ga and Al’ as recited.” *Id.*

In its sur-reply, Plaintiff contends that “[t]erms such as ‘compositions’ or ‘mixtures’ are understood to not exclude unrecited substances unless expressly limited.” Sur-Reply at 10. Plaintiff contends that the “Federal Circuit recently confirmed that ‘comprising’ claims followed by a *Markush* group (naming specific elements) does not limit foreclose the presence of other elements.” *Id.* (quoting *Amgen Inc. v. Amneal Pharmaceuticals LLC et al.*, 945 F.3d 1368, 1379 (Fed. Cir. 2020)).

### **The Court’s Analysis:**

After reviewing the parties’ arguments and considering the applicable law, the Court finds that the proper construction for this term is “forming ... a composition material and the composition material is Ga or Al, not both” / “a composition material ... formed ... and the composition material is Ga or Al, not both.”

With respect to “intentional,” the Court adopts its reasoning with respect to “intentional” in Term #3 and declines to include it in its final construction.

With respect to whether the composition material is limited to only gallium or aluminum, the Court adopts with Plaintiff’s proposed construction for the reasons that follow. **First**, like “mixture,” the plain meaning of “composition” is not limited single elements, but allows for multiple elements and does not exclude any unrecited substances. *Mars*, 377 F.3d at 1377 (“Since the term ‘mixture’ is entirely consistent with this construction, we hold that the ‘containing a mixture of lipid and solid ingredients’ limitation does not exclude the presence of additional, unnamed ingredients in the inner component of the claimed invention.”)).

**Second**, Defendants’ proposed construction improperly attempts to exclude some disclosed embodiments. *Oatey Co. v. IPS Corp.*, 514 F.3d at 1276 (Fed. Cir. 2008) (“We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification. . . . where claims can reasonably be interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence to the contrary.”). More specifically, the specification discloses that gallium droplets become part of the AlGaIn composition, which changes the composition of the AlGaIn layer. ’270 Patent at 3:44–48 (“Here, in the regions where Ga droplets are present, the solid phase composition of gallium within the undoped AlGaIn layer 16 becomes high, and thus, a spatial fluctuation is formed in the band gap of the undoped AlGaIn layer 16.”). This also means that the gallium droplets are no longer a single element, but rather now have become part of a larger composition. Defendants’ proposed construction excludes this embodiment.

**Third**, the Court agrees with Plaintiff that Defendants’ proposed construction would run afoul of the Federal Circuit’s holding in *Amgen*. 945 F.3d at 1379. More specifically, the Circuit

held in that case that a “comprising” claim that recited a *Markush* group only requires selecting a member of the *Markush* group, but it does not exclude also including elements outside of the *Markush* group. *Id.* Here, the claims recite both “comprising” and a *Markush* group (“the composition is one selected from Ga and Al”). Defendants’ proposed construction attempts to limit the claim scope to compositions only having gallium or aluminum (“a single element material of only Ga or Al”) which violates the holding of *Amgen*.

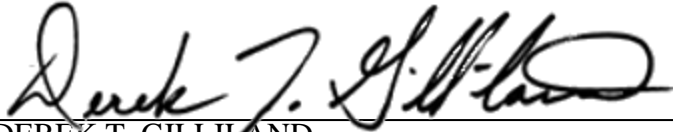
**Fourth**, Defendants attempt to limit the composition to only “a single element material of only Ga or Al,” improperly reads out “comprising” from both claims. *Generation II Orthotics Inc. v. Med. Tech. Inc.*, 263 F.3d 1356, 1365 (Fed. Cir. 2001) (a construction should not “revise or ignore the explicit language of the claims.”).

Therefore, for the reasons described above, the Court’s final construction for this term is “forming ... a composition material and the composition material is Ga or Al, not both” / “a composition material ... formed ... and the composition material is Ga or Al, not both.”

#### IV. CONCLUSION

In conclusion, for the reasons described herein, the Court adopts the below constructions as its final constructions.

**SIGNED** this 30<sup>th</sup> day of November, 2022.



DEREK T. GILLILAND  
UNITED STATES MAGISTRATE JUDGE

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Final Construction
#1: "forming . . . on" / "forming on" / "formed on"  '270 Patent, Claims 2, 9	"Form[ing/ed] directly or indirectly above"	"form(ing/ed) in contact with and above"	Plain-and-ordinary meaning, wherein the plain-and-ordinary meaning is "form[ing/ed] directly or indirectly above"
#2: "substrate"  '270 Patent, Claims 2, 9	"Base layer or other surface upon which the gallium nitride based semiconductor is deposited, etched, attached, or otherwise prepared or fabricated"	"foundation or base material, without a buffer layer, on which a semiconductor layer is deposited"	Plain-and-ordinary meaning
#3A: "a spatial fluctuation is created in the band gap by variation in the compositional ratio in the second gallium nitride based semiconductor created by the composition material"  '270 Patent, Claim 2	"Continuous widening and narrowing of the band gap laterally within the second gallium nitride based semiconductor is created by changes in the ratio of the elements in the second gallium nitride based semiconductor created by the composition material"	"intentionally creating a widening and narrowing of the band gap within the second gallium nitride based semiconductor layer by forming the composition material to change the ratio of the elements within the second gallium nitride based semiconductor layer."	"Widening and narrowing of the band gap laterally within the second gallium nitride based semiconductor is created by changes in the ratio of the elements in the second gallium nitride based semiconductor created by the composition material"
#3B: "a second gallium nitride based semiconductor layer having a varied compositional ratio"  '270 Patent, Claim 9	"A second gallium nitride based semiconductor layer having changes in the ratio of its elements"	"the ratio of the elements within a second gallium nitride based semiconductor layer is intentionally changed by the composition material."	"A second gallium nitride based semiconductor layer having changes in the ratio of its elements"

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Final Construction
<p>#4: "the first gallium nitride based semiconductor and the second gallium nitride based semiconductor are AlGaN"</p> <p>'270 Patent, Claims 2, 9</p>	<p>No construction is necessary.</p>	<p>"the first / second gallium nitride based semiconductor is a single layer of AlGaN"</p>	<p>Plain-and-ordinary meaning</p>
<p>#5: "forming ... a composition material; and the composition material is one selected from Ga and Al"/ "a composition material ... formed ...; and the composition is one selected from Ga and Al"</p> <p>'270 Patent, Claims 2, 9</p>	<p>"Forming ... a composition material and the composition material is Ga or Al, not both" / "a composition material ... formed ... and the composition material is Ga or Al, not both"</p>	<p>"intentionally forming only a single element material of Ga or Al" / "a single element material of only Ga or Al is intentionally formed"</p>	<p>"Forming ... a composition material and the composition material is Ga or Al, not both" / "a composition material ... formed ... and the composition material is Ga or Al, not both"</p>